

**ECTOPARASITES OF RATTUS RATTUS (L.) IN THE BERMUDA ISLANDS, WITH A NOTE ON CTENOCEPHALIDES FELIS (BOUCHÉ)**  
(SIPHONAPTERA, PULICIDAE) <sup>1,2</sup>

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Studies by Williams (1956a, 1956b, 1956e, 1958) and Wirth and Williams (1957) disclosed that there existed in the Bermudas a considerable number of insects, many of potential medical importance, which had not been reported in earlier surveys by Johnson (1913), Ogilvie (1928) or by Waterston (1940).

In an effort to obtain more complete information on the arthropods which might be of some medical importance in this group of islands an attempt was made to conduct an ectoparasite survey of the domestic rodent population.

Ogilvie (1928) reported *Ctenocephalides (Ctenocephalus) canis* (Curtis), *Pulex irritans* L., *Echidnophaga gallinacea* (Westwood) and *Tunga penetrans* (L.) as occurring in the Bermudas but indicated that the latter species was probably no longer present there. No other fleas have been reported and no surveys had previously been made of parasitic mites and lice.

#### METHODS

Eight standard live rat traps were used in this study. Animals trapped were released into white muslin, draw string bags and carried to the laboratory where the bag and contents were placed for a number of minutes into a chloroform killing jar. The contents of the bags were shaken into a white enamel pan and the inner surface of the bags carefully searched for ectoparasites. The animals were combed over the pan with a fine toothed comb and the pan examined for parasites. The animals were then submerged in magnesium sulphate solution and again combed. Any parasites removed floated to the surface.

#### RESULTS

The local health department began an extensive and successful rodent control campaign in 1951. As a result the rodent population was at a minimum and it was with great difficulty that rodents were

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<sup>2</sup> Thanks are due to Mr. Percy M. Wright, Health Inspector in charge of rodent control of the Bermuda Health Department, for suggestions in trapping and for specimens of 4 rats and 1 mouse; to Dr. Edward W. Baker, Bureau of Entomology and Plant Quarantine, Agricultural Research Administrations of the U. S. Department of Agriculture for his comments on *Androlaelaps* sp. and his examination and comments on *Marquesania*; to Mr. G. J. Love, then Acting Chief of the Newton Field Station, Communicable Disease Center, Public Health Service, Newton, Georgia, for the loan of the live rodent traps; and to numerous residents of the Bermuda Islands who permitted traps to be placed on their property.

trapped. According to Mr. Percy M. Wright, who is in charge of this campaign, *Rattus norvegicus* (Erxleben) remains in very small numbers on the islands but none were captured. *Mus musculus* L. was taken four times but only louse eggs were found on a single specimen. Twenty-seven *Rattus rattus* (L.) were captured in 5 of the 9 parishes.<sup>3</sup> No parasites were found on 6 of these animals. Three species of mites of the family Laelaptidae were recovered from 16 animals: *Androlaelaps* sp. was taken from 3 rats from Smith's Parish with 5 being the maximum recovered from any rat. *Laelaps nutalli* Hirst, ranging from 10 to 40 in number, was recovered from 7 rodents captured in the parishes of Paget, Pembroke, Smith's and St. George's. *Echinoelaelaps echidninus* (Berlese) was found on 6 *Rattus* from Paget, Smith's, and St. George's. The maximum number taken from any animal was 17. The mite family Listophoridae was represented by *Marquesania expansa* (Ferris) which was found on 2 rats from St. George's parish. The hair of these animals was covered with the mites and it appeared that their numbers must have been in the several thousands.

The flea, *Xenopsylla cheopis* Roths., was taken from 3 animals 1 of which was trapped in each of the parishes of Southampton, Pembroke and Smith's. Six was the maximum number taken from any animal.

The louse, *Polyplax spinulosa* (Burmeister), likewise was recovered from 3 animals from the same 3 parishes as was the flea. The maximum number on any one animal was 5.

#### DISCUSSION

As a result of the efficient rodent control campaign conducted by the local health department this survey represents a much more limited one than was originally planned. However, since no rodent ectoparasite survey had previously been conducted none of the 6 species of ectoparasites recovered from *R. rattus* had been reported from this area. It is felt that there are probably other species present on rodents and that more extensive work in the future might bring some of these to light.

Dr. Edward W. Baker was of the opinion that until the taxonomy of the genus *Androlaelaps* is more clearly elucidated that it would not be possible to determine the species found here. Dr. Baker also stated (personal communication) that the genus *Marquesania*, to the best of his knowledge, has not been previously reported from the New World. *Marquesania expansa*, originally described from the Marquesas, by Ferris (1932) as *Listrophoroides expansus*, has apparently never been reported elsewhere.

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<sup>3</sup> See Williams (1956c) for a map giving the location of the parishes of the Bermudas.

## A NOTE ON CTENOCEPHALIDES FELIS (BOUCHÉ)

Fleas were extremely common on dogs and cats and in many human habitations. An examination of 12 collections of fleas from such sources disclosed *Ctenocephalides felis*, the cat flea, to be the most common. *C. felis* had not previously been reported from the Bermuda Islands. Since no *C. canis* were observed it may be possible that the report of this species by Ogilvie was in error and that he was actually dealing with *C. felis*. *Pulex irritans* L., previously reported from the Bermudas, was taken twice from human habitations.

## SUMMARY

An examination of 27 *Rattus rattus* collected from 5 of the 9 parishes of the Bermuda Islands disclosed 21 of them to be infested with one or more of the following ectoparasites: *Androlaelaps* sp., *Laelaps nuttalli*, *Echinolaelaps echidnius*, *Marquesania expansa*, *Xenopsylla cheopis*, and *Polyplax spinulosa*. These are reported from this geographical area for the first time. The genus *Marquesania* has apparently not been previously reported from the New World and *M. expansa* from anywhere except the Marquesan Islands. The cat flea, *Ctenocephalides felis*, also reported for the first time from the Bermudas, was very common on cats and dogs as well as being present in many human habitations. *Pulex irritans*, previously reported, was also found in dwellings.

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